

No. 5. — *The Oonopidae of Panama*

BY ARTHUR M. CHICKERING

The Cambridges ('89-'05) had no representatives of this family from Panama and only one species, *Dysderina plena* Cambridge, from all of Central America. Petrunkevitch ('25) described *Oonops reticulatus* from Panama City. Mr. Banks ('29) recorded *Dysderina plena* Cambridge from Mt. Hope and the Canal Zone Biological Area, C. Z., but by error, as shown below. Gertsch ('41) described *Scaphiella barroana* and *S. williamsi* together with *Oonopinus centralis*. This author also reported the presence of *Dysderina plena* Cambridge in the material sent him by E. C. Williams, Jr. who collected intensively from a small area of the surface of the forest floor on the Canal Zone Biological Area; the specific identity of this spider is open to question.

Including my personal collections of 1934, 1936, and 1939 together with valuable additions sent me by Dr. James Zetek of Balboa, C. Z. a considerable amount of material has now accumulated which sheds much light on the oonopid fauna of this highly interesting country. Together with several new records of known species the following, believed to be new to science, have been selected and described in accord with my usual formula: *Dysderina dura* sp. nov.; *D. recondita* sp. nov.; *D. seclusa* sp. nov.; *D. silvatica* sp. nov.; *Oonopinus modestus* sp. nov.; *O. pallidulus* sp. nov.; *Oonopoides bryantae* sp. nov.; *Oonops donaldi* sp. nov.; *O. zeteki* sp. nov.; *Opopaea recondita* sp. nov.; *O. timida* sp. nov.; *Scaphiella gertschi* sp. nov.; *Stenoonops petrunkevitchi* sp. nov.

Monoblemma unica Gertsch, which some might consider an oonopid, is here regarded as properly included in the Tetrablemmidae as originally placed by Dr. Gertsch.

It gives me pleasure again to acknowledge my indebtedness to the following members of the staff of the Museum of Comparative Zoölogy at Harvard College for their continued encouragement and many courtesies for many years: Dr. A. S. Romer, Director; Dr. Joseph C. Bequaert, Head Curator of Recent Insects; Miss Elizabeth B. Bryant, Assistant Curator of Insects; Mr. Ludlow Griscom, Editor of Publications.

Key to Known Genera of Oonopidae of Panama

1. Both dorsal and ventral abdominal scuta present (*Dysderina*, *Opopaea*, males of *Scaphiella*, *Triaeris*) 2
1. With a dorsal scutum or a ventral scutum (not both), or completely lacking scuta (*Ischnothyreus*, *Oonopinus*, *Oonopoides*, *Oonops*, females of *Scaphiella*, *Stenoonops*) 5

2. Legs well supplied with spines (*Dysderina*, *Triaeris*).....3
2. Legs without true spines (*Opopaea*, *Scaphiella* males).....4
3. Sternum conspicuously grooved; abdomen nearly completely covered by dorsal and ventral scuta.....*Dysderina*, p. 208
3. Sternum not conspicuously grooved, quite smooth and glabrous; abdomen with a less extensive dorsal scutum and a ventral scutum restricted to anterior half of venter.....*Triaeris*, p. 243
4. ALE well separated; posterior row of eyes slightly recurved; abdomen definitely depressed dorsoventrally.....*Opopaea*, p. 231
4. ALE barely separated; posterior row of eyes slightly recurved; abdomen definitely not depressed.....*Scaphiella*, p. 234
5. ALE contiguous; posterior row of eyes procurved; with numerous ventral leg spines; with a small dorsal scutum but lacking a ventral scutum.....*Ischnothyreus*, p. 219
5. Not with combination of characters given above.....6
6. ALE well separated; posterior row of eyes recurved; legs without spines; all scuta lacking.....7
6. Not with combination of characters given above.....8
7. Posterior row of eyes strongly recurved; maxillae long, slender and strongly convergent.....*Oonopinus*, p. 220
7. Posterior row of eyes moderately recurved; maxillae also long, slender, convergent but with tips divergent.....*Oonopoides*, p. 224
8. ALE barely separated; legs without spines; with a ventral scutum which extends laterally to middorsal line; abdomen laterally compressed.....*Scaphiella* (females) p. 234
8. Not with combination of characters given above.....9
9. ALE moderately well separated; lip about as wide as long; legs with numerous spines; scuta lacking.....*Oonops*, p. 226
9. ALE only slightly separated; lip wider than long; legs without spines; scuta lacking.....*Stenoonops*, p. 241

Genus *DYSDERINA* Simon, 1891

DYSDERINA DURA sp. nov.

(Figures 1-3)

Male holotype. Total length 1.92 mm. Carapace .910 mm. long, .733 mm. wide opposite second coxae where it is widest; well rounded along ventral border from opposite palp to posterior margin; .444 mm. tall and, therefore, about .60 as tall as wide; quite evenly arched from PME to beginning of steep posterior declivity opposite third coxae; surface almost completely and finely granulated except on dorsal surface where the area is nearly devoid of granulations; without a longitudinal thoracic groove; numerous short recurved bristles es-

pecially conspicuous in the non-granular area; convex as described for *D. recondita* sp. nov. and *D. seclusa* sp. nov.

Eyes. Six in 2 rows; in a moderately compact group; AME lacking; posterior row occupies about thirteen-seventeenths of width of carapace at that level; posterior row gently recurved. Ratio of eyes ALE : PME : PLE = 4.5 : 4.5 : 5. Boundary of ALE irregular; other eyes somewhat oval. Long axis used for measurements unless otherwise stated. ALE separated by about four-ninths of their width, from PLE by a thin line and from PME by about two-ninths of their diameter. PME contiguous along about one-third of their circumference and barely separated from PLE. Posterior row wider than anterior row in ratio of 13 : 10 (Fig. 1). Height of clypeus equal to two-thirds of the diameter of ALE.

Chelicerae. Vertical, essentially parallel (by outer margins); basal segment .27 mm. long; with no basal boss; with a well developed scopula along promargin of obscure fang groove which has a single tooth near medial end (observed in a dissected paratype to avoid injury to holotype). Fang slender and evenly curved.

Maxillae. Moderately long, slender; somewhat convergent anterior to lip; somewhat notched just anterior to insertion of palp which occurs on basal third; longer (exclusive of hook) than wide at notch in ratio of 14 : 5; with well developed scopula along oblique medial margin at apex; apex with a conspicuous slender hook.

Lip. Details of chelicerae, maxillae, and lip taken from a dissected paratype to avoid injury to holotype. Quite strongly chitinized; wider than long in ratio of 2 : 1; somewhat concave just in front of posterior border; bent almost at a right angle about two-thirds from base; anterior border with an irregular row of stiff bristles.

Sternum. Nearly scutiform; almost as wide as long; slightly the widest between second coxae but almost as wide between first coxae; strongly chitinized and more or less intricately grooved; with more or less distinct lobules opposite the coxae; with a distinct chitinous fold passing around ventral half of pedicel; sternal suture distinctly procurved around base of lip; with chitinous bridges passing between coxae; posterior end bluntly rounded and not extended between fourth coxae which are separated by about ten-sevenths of their width. Coxae three and four subglobose; coxae one and two more elongated.

Legs. 4123. Width of first patella at "knee" .0777 mm., tibial index 9. Width of fourth patella at "knee" .0777 mm., tibial index 9.

Claws and trichobothria essentially as recorded for *D. seclusa* sp. nov. Length of palpal tarsus does not include embolus and conductor.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.710	.289	.577	.511	.289	2.376
2.	.710	.289	.533	.533	.266	2.331
3.	.555	.230	.380	.522	.222	1.909
4.	.766	.311	.555	.710	.266	2.608
Palp	.200	.111	.150	...	.355	.816

Spines. First leg: femur only prolateral 0-0-0-1-1 (last one might be considered either a bristle or a weak spine, the other 2 recorded for *D. seclusa* sp. nov. and *D. recondita* sp. nov. appear to have been replaced in this species by a pair of bristles (these are here considered prolateral but might be considered to lie on the promargin of the ventral surface); patella 0; tibia only ventral 2-2-2-2-1p-0 (the fifth on the retromargin appears to have been replaced by a bristle); metatarsus only ventral 2-2-1p (third on retromargin appears to have been replaced by a bristle and all are somewhat staggered). Second leg: femur without true spines; patella 0; tibia essentially as in first; metatarsus only ventral 2-2 but with much irregularity in position. Third and fourth legs without spines. Palp: with several long bristles, 2 on prolateral side of tibia may be considered weak spines.

Palp. Essentially as described in *D. seclusa* sp. nov. and *D. recondita* sp. nov. except in respect to tarsal features. Tarsal spines emerge together as a single apophysis about one-fifth from distal end; this process then separates into a more proximal, shorter, black, slender hook extending obliquely distal, and a second hook extending distally as a brownish, more transparent, larger, curved extension (Figs. 2-3).

Abdomen. Ovoid, plainly and considerably separated from the cephalothorax by the strongly chitinized and corrugated pedicel; longer than wide (exclusive of pedicel) in ratio of 10 : 7; widest near middle; spinnerets and anal tubercle as usual in the genus from Panama; dorsal scutum covers entire dorsum except about one-eighth of length at posterior margin; ventral scutum entire, including pedicel and extending posteriorly for a little more than three-fourths of the distance from genital pore to base of anterior spinnerets. Position of reduced colulus not indicated. Openings to book-lungs, tracheal spiracle, and genital pore as recorded for *D. seclusa* sp. nov.

Color in alcohol. Essentially as described for *D. seclusa* sp. nov.

Type locality. Male holotype from C. Z. Biological Area, C. Z., July, 1936; taken while sifting forest litter. Paratype males from: El Valle, R. P., July, 1936; Porto Bello, R. P., Aug., 1936; C. Z. Biological Area, C. Z., June-July, 1934, July, 1936, Oct.-Dec., 1941 (Zetek), Apr.-May, 1942, July, 1943-Mar., 1944 (Zetek), June-Oct., 1946 (Zetek).

DYSDERINA PLENA O. Cambridge, 1884

D. plena F. Cambridge, 1899

? *D. plena* Williams, 1941

The Cambridges had this species only from Mexico. Banks had a single female, now in poor condition and may or may not be properly assigned. Mr. Banks ('29) also reported this species from 2 locations in the Canal Zone. Close examination of these shows that the Mt. Hope specimen is a *Scaphiella* (probably *S. barroana* Gertsch) with the right palpal tarsus very poorly developed and that the male from the Canal Zone Biological Area belongs to *D. dura* sp. nov.; the female accompanying the latter probably goes with it. I have not seen the specimens identified by Dr. Gertsch for Dr. Williams as *D. plena* O. Cambridge but in view of my experience with members of this genus from Panama I consider it unlikely that they are correctly assigned.

DYSDERINA RECONDITA sp. nov.

(Figure 4)

Male holotype. Total length 2.00 mm. Carapace .955 mm. long, .755 mm. wide opposite second coxae where it is widest; well rounded along ventral border from opposite palp to posterior border; .377 mm. tall and, therefore, about .50 as tall as wide; quite evenly arched from PME to beginning of steep posterior declivity which begins opposite interval between second and third coxae; surface finely granulated except along ventral border, on top of carapace, and in a few irregular elongate areas elsewhere; quite convex along median region with lateral sides moderately steep; with a sparse covering of short recurved bristles most conspicuous in dorsal area free of granulations.

Eyes. Six in 2 rows; in a moderately compact group, AME lacking; eye group occupies about three-fourths of the width of the carapace at level of posterior row; posterior row gently recurved, measured by posterior borders. Ratio of eyes $ALE : PME : PLE = 4 : 4 : 4$ (irregularities in outline make determinations of ratios somewhat uncertain). ALE separated by one-half their diameter, from PLE by one-eighth of their diameter, and from PME by one-third of their diameter. PME separated from one another along the whole medial boundary only by a line; tangent to PLE. Hence all eyes are slightly less closely crowded than are those in *D. seclusa* sp. nov. Posterior row wider than anterior row in ratio of 4 : 3. Height of clypeus equal to nearly three-quarters of the greatest width of ALE.

Chelicerae. Vertical, parallel, basal segment .29 mm. long; without

a basal boss; with a moderately well developed scopula along promargin of obscure fang groove which has a single small retromarginal tooth near medial end (observed in a dissected paratype to avoid injury to holotype). Fang slender and evenly curved.

Maxillae. Long, slender, somewhat convergent anterior to lip; somewhat notched just anterior to insertion of palp which occurs in basal third; longer than wide at notch in ratio of 13 : 4; with a well developed scopula along oblique medial margin; apex less distinctly hooked than in *D. seclusa* sp. nov., appears to terminate in 2 blunt tubercles.

Lip. Quite strongly chitinized; wider than long in ratio of 17 : 11; distinctly concave in front of posterior border; reaches to middle of maxillae.

Sternum. Nearly scutiform; almost as wide as long; almost equally wide between first and second coxae; strongly chitinized and grooved with more or less distinct lobules opposite the coxae separated by the grooves; separated into 6 remarkably clear areas by the above-mentioned grooves; with a distinct chitinous fold around ventral half of pedicel; sternal suture distinct and procurved; with chitinous bridges which apparently pass dorsally through intercoxal spaces; posterior end blunt and not extended between fourth coxae which are separated by ten-sevenths of their width. Coxae three and four subglobose; coxae one and two somewhat more elongated.

Legs. 4123. Width of first patella at "knee" .0888 mm., tibial index 11. Width of fourth patella at "knee" .0888 mm., tibial index 10.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.666	.268	.555	.450	.266	2.205
2.	.622	.266	.533	.477	.289	2.187
3.	.599	.289	.400	.466	.244	1.998
4.	.733	.333	.533	.622	.311	2.532
Palp	.200	.144	.155	...	.400	.899

Two claws, apparently like those recorded for *D. seclusa* sp. nov. Length of palpal tarsus given above is exclusive of embolus and conductor. Trichobothria observed essentially as recorded in *D. seclusa* sp. nov.

Spines. First leg: femur only ventral 0-0-2-2-0 (staggered and so far lateral that they might be considered as such by some workers); patella 0; tibia only ventral 2-2-2-2-1p-0 (the fifth on retromargin appears to have been replaced by a bristle); metatarsus only ventral 2-2-1p (the third on retromargin is replaced by a bristle). Second leg:

essentially as in first with spines generally shorter and less conspicuous. Third and fourth legs devoid of spines. Palp devoid of true spines but with long bristles, especially on the tibia.

Palp. Short, simple, clavate; tarsus quite inflated; tarsal spines (embolus, conductor, etc.) emerge on retrolateral side only about one-seventh from tip (considerably nearer tip than in *D. seclusa* sp. nov.), then separate into a short, moderately broad process which passes transversely toward retrolateral side and is squarely truncated at tip, and a second process which curves into a moderately broad thin hook, expands distally and has a single serration on its anterior surface (Fig. 4).

Abdomen. Ovoid; only moderately separated from cephalothorax by strongly chitinated pedicel; longer than wide in ratio of 47 : 35; widest about two-thirds from base; anal tubercle covered by posterior border of dorsal scutum; spinnerets somewhat retracted but apparently like those seen more clearly in *D. seclusa* sp. nov. Two black recurved bristles appear to mark the position of the reduced colulus. Dorsal scutum covers entire dorsal area. Ventral scutum entire, covers ventral area back to near base of spinnerets. An irregular transverse double row of 10 or 11 stiff black bristles extends across between base of spinnerets and posterior border of ventral scutum. Openings of book-lungs, tracheal spiracle, and genital organs distinct as in *D. seclusa* sp. nov.

Color in alcohol. Essentially as described for *D. seclusa* sp. nov.

Type locality. Male holotype from Boquete, R. P., July, 1939; sifted from debris on forest floor. Two paratype males taken with holotype. Female unknown.

DYSDERINA SECLUSA sp. nov.

(Figure 5)

Male holotype. Total length 1.92 mm. Carapace .888 mm. long; .733 mm. wide opposite second coxae where it is widest; well rounded laterally along ventral border from opposite palp to posterior border; .333 mm. tall and, therefore, about .45 as tall as wide; evenly arched in profile from PME to beginning of steep posterior declivity which begins opposite interval between second and third coxae; surface finely granulated in areas separated by smooth regions; quite convex along median region with sides moderately steep; median thoracic groove lacking.

Eyes. Six in 2 rows; in a moderately compact group; AME lacking; eye group occupies about thirteen-fifteenths of width of carapace at

level of posterior row; posterior row gently recurved (some would regard it as straight if measured by posterior borders). Ratio of eyes ALE : PME : PLE = 4.5 : 4.75 : 4.5. All eyes somewhat oval; long axes used for ratios. ALE separated by four-ninths of their diameter, contiguous to PLE and separated by about two-ninths of their diameter from PME. PME contiguous to one another and barely separated from PLE. Posterior row wider than anterior row in ratio of 13 : 10. Height of clypeus equal to about three-fourths of the diameter of ALE.

Chelicerae. Vertical, slightly divergent, outer margins nearly parallel; basal segment .29 mm. long; with no basal boss observed; with a moderately well developed scopula along promargin of obscure and poorly defined fang groove which bears a single small retromarginal tooth near its medial end (observed in a paratype to avoid injury to holotype). Fang slender and evenly curved.

Maxillae. Long, slender, somewhat convergent anterior to lip; about four times as long as wide in middle; swollen near base at insertion of palp; with moderately well developed scopula along medial margin at apex which terminates in a blunt hook.

Lip. Strongly chitinized except along anterior rounded border; wider than long in ratio of about 7 : 5; somewhat concave just in front of posterior border; reaches only about five-twelfths of the length of the maxillae.

Sternum. Nearly scutiform; longer than wide in ratio of 23 : 19; widest between second coxae but nearly as wide between first coxae; strongly chitinized and grooved with more or less distinct lobules opposite each pair of coxae; with a distinct ring around anterior end of pedicel; sternal suture clear and strongly procurved; posterior end bluntly rounded and not extended between fourth coxae which are separated by ten-sevenths of their width. Coxae three and four short and nearly globose; coxae one and two somewhat elongated.

Legs. 4213. Width of first patella at "knee" .0888 mm., tibial index 10. Width of fourth patella at "knee" .0777 mm., tibial index 10.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.644	.266	.599	.466	.31	2.285
2.	.666	.266	.555	.533	.31	2.330
3.	.599	.266	.400	.488	.24	1.993
4.	.734	.266	.510	.650	.32	2.480
Palp	.200	.122	.155	...	.33	.810

Claws 2; set on a moderately long onychium; apparently both are simple, similar, each with 2 series of teeth one of which consists of 3 or 4 fairly stout teeth on the proximal two-thirds and the other of 2

or 3 more lateral and more distal in position. Trichobothria on first leg observed as follows: 2 on tibia, 1 at about one-third and another about two-thirds from base; one near distal end of metatarsus; all of these are nearly or quite dorsal in position.

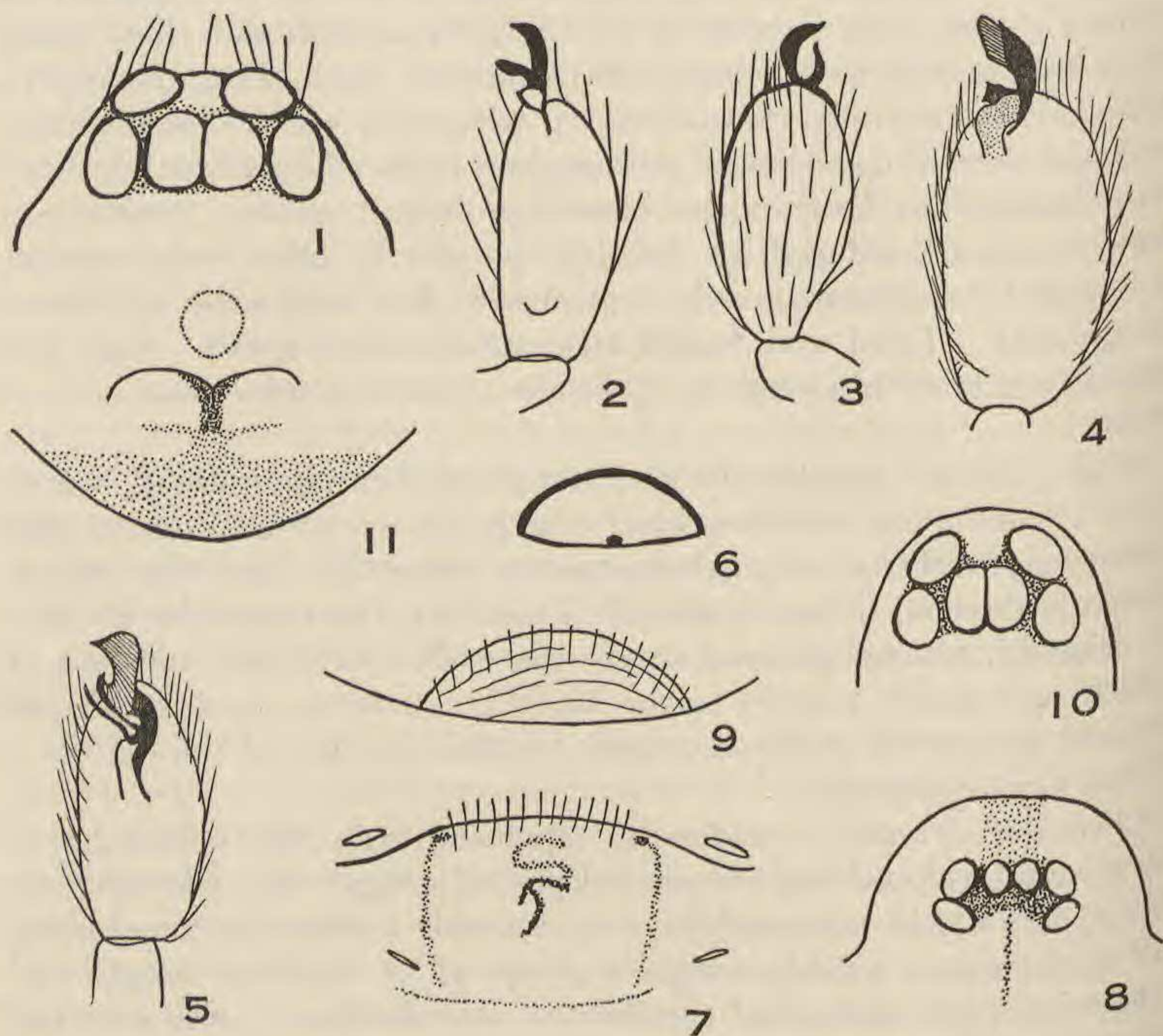
Spines. First leg: femur ventral 0-1r-1r-0-0, prolateral 0-0-1v-1v-0, elsewhere 0 (perhaps these should all be regarded as ventral); tibia only ventral 2-2-2-2-1p-0, second and third more than half as long as segment, others shorter, diminishing distally to fifth; metatarsus only ventral 2-2-1p (the spine which should match with the third of the series on promargin is replaced by a bristle), those on promargin are far displaced toward prolateral surface. Second leg: femoral spines reduced to bristles; patella 0; tibia only ventral 2-2-2-2-0-0; metatarsus only ventral as in first with some additional irregularity. Third and fourth legs without true spines. Palp apparently only with a single long slender prolateral spine near base of tibia.

Palp. Short, simple, clavate; tarsus moderately inflated; tarsal spines (conductor, embolus, etc.) emerge on ventro-retrolateral side about one-third from apex, then separate into a thin, bladelike process which is directed obliquely dorsal in position; the remainder extends as a broad, somewhat concave process with 2 divisions, the first of which runs nearly parallel to the bladelike structure already referred to, and the second of which extends beyond the apex of the bulb as a distinct hook (Fig. 5).

Abdomen. Ovoid; considerably separated from the cephalothorax by a well developed and corrugated pedicel; longer than wide in ratio of 45 : 32; widest near middle; anal tubercle a short flattened cone; six spinnerets in a fairly compact group, all of moderate length and size, middle pair somewhat the shortest and slenderest; with a tuft of 2 or 3 black bristles regarded as marking the site of the reduced colulus. Dorsal scutum covers all of dorsal region except a small area dorsal to anal tubercle; ventral scutum entire, covering anterior end dorsally to meet the dorsal scutum and surrounding the pedicel in a much corrugated band and extending posteriorly for nearly four-fifths of the distance from sexual pore to base of anterior spinnerets; with openings to book-lungs and tracheal spiracles small but distinct; with small central sexual pore opposite tracheal spiracles.

Color in alcohol. Carapace a clear medium brown, darker along ventral border, with black pigment mostly confined to central ocular region around eyes. Sternum somewhat lighter than carapace. Legs, chelicerae, and maxillae a clear brownish-yellow; palps the same with tarsus yellowish-white. Dorsal scutum a clear medium brown; ventral scutum somewhat lighter with "lung" patches much darker.

Type locality. Male holotype from Canal Zone Biological Area; taken in a Berlese funnel sometime between July, 1943 and March, 1944 by Dr. James Zetek. Three paratype males taken over the same period and in the same locality with the holotype. Two male paratypes from the same locality, June-Oct., 1946 by Dr. Zetek. The



External Anatomy of Oonopid Spiders

Figures 1-11

- Fig. 1. *Dysderina dura* sp. nov.; eyes, from above.
 Figs. 2-3. *D. dura*; male palpal tarsus, nearly ventral and dorsal views, respectively.
 Fig. 4. *D. recondita* sp. nov.; male palpal tarsus, nearly ventral view.
 Fig. 5. *D. seclusa* sp. nov.; male palpal tarsus, nearly ventral view.
 Fig. 6. *D. silvatica* sp. nov.; epigynum.
 Fig. 7. *Ischnothyreus peltifer* (Simon); epigynum.
 Figs. 8-9. *Oonopinus modestus* sp. nov.; eyes, from above and epigynum, respectively.
 Figs. 10-11. *O. pallidulus* sp. nov.; eyes, from above and epigynum, respectively.

females are unknown but are likely to be among numerous females formerly assigned to *D. plena* O. Cambridge. It is difficult to separate the females into species and still more difficult to pair them with the proper males.

DYSDERINA SILVATICA sp. nov.

(Figure 6)

Note: It is difficult to separate out the different species from among the numerous females of this genus now in my collection. I believe this has been done with the species here recognized and described, but it is impossible at this time to be certain as to its relation to the three species of males now recognized from Panama.

Female holotype. Total length 2.20 mm. Carapace .966 mm. long, .799 mm. wide opposite second coxae where it is widest; well rounded along ventral border from opposite palps and including posterior border except a central posterior notch; .355 mm. tall and, therefore, about .44 as tall as wide; quite evenly arched from PME to beginning of steep posterior declivity opposite interval between second and third coxae; surface finely granulated except in several more or less radial areas along lateral sides and a part of the dorsal surface of the carapace; with a sparse covering of short recurved bristles, most conspicuous in dorsal non-granulated area; without a thoracic groove of any kind; moderately convex medially with moderately sloping lateral sides.

Eyes. Six in 2 rows; in a moderately compact group; AME lacking; posterior row occupies twenty-five thirty-seconds of the width of the head at level of posterior borders; posterior row gently recurved, measured by posterior borders. Ratio of eyes ALE : PME : PLE = 4.5 : 4 : 4.5 (irregularity in outline makes ratios somewhat uncertain). ALE separated by slightly less than their radius, from PLE by a line, and from PME by one-fourth their diameter. PME contiguous through nearly one-third of their circumference, barely separated from PLE. Posterior row wider than anterior row in ratio of about 6 : 5. Height of clypeus equal to three-fourths of the greatest diameter of ALE.

Chelicerae. Vertical, essentially parallel by outer margin; basal segment .29 mm. long; with no basal boss; with a moderately well developed scopula along promargin; fang groove obscure and with a single tooth of moderate size near inner end of groove (tooth regarded as retromarginal but in some specimens it appears to be on the promargin). Tooth observed on dissected paratype to avoid injury to holotype.

Maxillae. Moderately long and slender; somewhat convergent distal to lip; somewhat notched laterally just anterior to insertion of palp on basal third; longer than wide at notch in ratio of about 15 : 4; with well developed scopula along oblique medial apical border; pointed distally but without a hook.

Lip. Details of chelicerae, maxillae and lip taken from a dissected paratype to avoid injury to holotype. Quite strongly chitinized; wider than long in ratio of about 8 : 5; somewhat concave just in front of posterior border; bent almost at a right angle near middle; anterior border with an irregular row of stiff bristles.

Sternum. Scutiform; as wide as long; slightly the widest between second coxae but nearly as wide between first coxae; strongly chitinized intricately grooved, and more or less definitely lobulated opposite the coxae; with a distinct chitinous fold passing around ventral half of pedicel; sternal suture distinct and procurved around base of lip; with strongly developed chitinous bridges passing dorsally between coxae; posterior end blunt and not extended between fourth coxae which are separated by ten-sevenths of their width. Third coxae nearly globose, other three pairs more elongated.

Legs. 41=23. Width of first patella at "knee" .0888 mm., tibial index 9. Width of fourth patella at "knee" .0888 mm., tibial index 9.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.755	.289	.666	.532	.266	2.508
2.	.733	.266	.644	.599	.266	2.508
3.	.644	.277	.444	.599	.222	2.186
4.	.821	.377	.599	.777	.288	2.862

Trichobothria: palpal tibia with 2 dorsals, one about one-fifth from base and the other about one-third from base; on first leg as described in *D. seclusa* sp. nov. Claws apparently as described in *D. seclusa* sp. nov.

Spines. First leg: only femur ventral 1r-1r-2-1p-0; patella 0; tibia only ventral 2-2-2-2-0; metatarsus only ventral 2-2-1p (all staggered somewhat). Second leg: femur as in first except third on retromargin is lacking; patella 0; tibia only ventral 2-2-2-2-1p (all staggered); metatarsus only ventral 2-2-0. Other legs and palp without true spines.

Abdomen. Ovoid; considerably separated from cephalothorax by corrugated and strongly chitinized pedicel; longer than wide (exclusive of pedicel) in ratio of 26 : 21; widest near middle; spinnerets and anal tubercle as usual in genus; dorsal scutum extends over about four-fifths

of length of dorsum and leaves a narrow lateral band uncovered; ventral scutum plainly divided by epigastric furrow; anterior part continuous with chitinous covering to pedicel and extending over anterior end of abdomen to meet dorsal scutum above; posterior part extends about eleven-eighteenths of distance from genital groove to base of anterior spinnerets; with a well defined anterior chitinous band extending about half-way around base of spinnerets; position of reduced colulus indicated by a pair of long black bristles just anterior to interval between first pair of spinnerets. Openings to book-lungs and tracheal spiracles distinct.

Epigynum. Extremely simple; only a small oval central opening with a heavily chitinized anterior border and a minute dot near the center of this structure (Fig. 6).

Color in alcohol. Parts of abdomen not covered by scuta (more extensive than in males of the genus) yellowish-white. Elsewhere essentially as described in *D. seclusa* sp. nov.

Type locality. Female holotype from Canal Zone Biological Area, C. Z., August, 1939. Paratype females from the same locality: June-July, 1934; June-July, 1936; June, 1939; Oct.-Dec., 1941 (Zetek); Apr.-May, 1941 (Zetek); July, 1943-March, 1944 (Zetek); Madden Dam region, C. Z., August, 1936, 1939; C. Z. Forest Reserve, August, 1936, July, 1939; Ft. Sherman, C. Z., August, 1939; Gamboa, C. Z., August, 1939; El Valle, R. P., July, 1936.

Genus ISCHNOTHYREUS Simon, 1893

ISCHNOTHYREUS PELTIFER (Simon), 1891

(Figure 7)

- Ischnaspis peltifer* Simon, 1891
- Ischnothyreus peltifer* Simon, 1893
- I. peltifer* Petrunkevitch, 1911
- I. peltifer* Petrunkevitch, 1929
- I. peltifer* Bryant, 1940

There are now 2 females in the collection of the Museum of Comparative Zoölogy from Cuba and a male from Bermuda which is thought to be the long missing male for this species, but so far as I know it has never been described. I have 1 female from C. Z. Forest Reserve, C. Z., July, 1939.

Although the epigyna of females in this family are exceedingly simple and singularly lacking in clear and definite characters I think they

have some value in separating the species. For this reason I have prepared a simple drawing of the epigynum of *I. peltifer* (Simon) (Fig. 7).

Genus OONOPINUS Simon, 1892

OONOPINUS CENTRALIS Gertsch, 1941

Known only from a male and female collected by Dr. E. C. Williams, Jr., July, 1938, in the Canal Zone Biological Area. The species has not yet appeared in my collections. In a conference with the author of the species, August 6, 1946, it was agreed that the "transverse process" on the palpal bulb mentioned in the text and shown in the drawing is not at the base of the bulb but is in reality at its apex. The bulb is reflected backward so that the distal embolus and conductor come to lie in a basal position whereas they are actually distal.

OONOPINUS MODESTUS sp. nov.

(Figures 8-9)

Female holotype. Total length .888 mm. Carapace .400 mm. long, .355 mm. wide opposite second coxae where it is widest; somewhat irregular along ventral border; moderately convex along median region with lateral sides gently sloping; .155 mm. tall and, therefore, about .44 as tall as wide; eyes on a low protuberance; arches gently from just behind eyes to steep posterior declivity which is moderately abrupt and begins opposite third coxae and is overlapped by anterior end of abdomen; surface smooth and shining except for gentle grooves; provided with a few bristles of moderate length; quite convex in clypeal region.

Eyes. Six in two rows; not compactly arranged; AME presumably lacking; eye group occupies nearly one-half the width of carapace at their level; viewed from above, posterior row strongly recurved so that PME lie between ALE and form with them a nearly straight line. Ratio of eyes $ALE : PME : PLE = 2 : 1.75 : 2.25$ (median eyes best delimited, others somewhat irregular in outline and difficult to measure). ALE separated from one another by about twelve-sevenths of their diameter, almost in contact with PME, tangent to PLE. PME separated from one another by a line, from PLE by three-fourths of their diameter. PLE separated from one another by about three-halves of their diameter. Posterior row only slightly wider than anterior row (Fig. 8). Height of clypeus equal to three-halves of the diameter of ALE.

Chelicerae. Vertical, parallel, of moderate size for so small a spider; basal segment .18 mm. long; fang slender and evenly curved. Unable to observe fang groove.

Maxillae. Moderately long and slender; convergent beyond lip.

Lip. Nearly twice as wide as long; reaches just beyond middle of chelicerae; membranous with very little chitinization.

Sternum. Broadly scutiform; nearly as broad as long; widest between second coxae but nearly as wide between first coxae; anterior border gently recurved but sternal suture, if present, is too obscure for observation; moderately convex; posterior border recurved and not extended between fourth coxae which are separated by their width; gently grooved opposite intercoxal spaces; all coxae short and subglobose.

Legs. 4123. Width of first patella at "knee" .0444 mm., tibial index 10. Width of fourth patella at "knee" .0444 mm., tibial index 9.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.422	.111	.355	.266	.200	1.354
2.	.366	.100	.333	.244	.200	1.243
3.	.333	.0999	.266	.222	.200	1.121
4.	.422	.0999	.422	.330	.222	1.496

Spines. Legs and palps appear to be completely devoid of spines.

Abdomen. About one-third overlaps carapace; subglobose; longer than wide in ratio of 4 : 3; .533 mm. long (exclusive of spinnerets); without scuta; openings to book-lungs and tracheal spiracles obscure; colulus appears to be well developed as a brown tubercle between bases of anterior spinnerets which are unnoteworthy, normal to genus.

Epigynum. Only a very simple oval transverse structure with a weakly developed arching anterior lip (Fig. 9).

Color in alcohol. Carapace: yellowish with dull reddish-brown reticulations; black pigment concentrated in ocular region. Sternum brownish with yellowish dots. Legs yellowish, dusted with brownish specks, especially along lateral sides; other appendages similarly colored. Abdomen: reddish-brown with a purplish cast and many minute yellowish dots; from base 2 rows of yellowish dots diverge to near lateral sides of anal tubercle; a similar row extends along lateral sides and another row bounds the venter on each side; venter itself is a lighter reddish-brown with yellowish dots.

Type locality. Female holotype from C. Z. Biological Area, C. Z., June, 1938. Collected by Prof. Alexander Petrunkevitch together with 3 female paratypes one of which was carrying 6 young very loosely bound together. Probably sifted from forest litter.

OONOPINUS PALLIDULUS sp. nov.

(Figures 10-11)

Note: There is some doubt concerning the proper placement of this species. It is provisionally placed here.

Female holotype. Total length 2.353 mm. (not including spinnerets and somewhat protruding chelicerae). Carapace .866 mm. long; .664 mm. wide opposite second coxae where it is widest; moderately well rounded from opposite palp to posterior border; .333 mm. tall and, therefore, almost exactly .50 as tall as wide; rises only slightly behind PME and arches gently to steep posterior declivity which begins opposite third coxae and descends with slight concavity near middle and with moderately steep descent; separated slightly from abdomen but this may be due to distension in handling prior to preservation; surface smooth and shining except for hairs and a few light bristles; considerably convex along median region with lateral sides moderately sloping; considerable iridescence shows in certain light.

Eyes. Six in 2 rows; in a moderately compact group; AME presumably lacking; posterior row occupies eleven-fifteenths of width of carapace at level of posterior borders; posterior row moderately recurved. Ratio of eyes $ALE : PME : PLE = 8.5 : 8 : 7.5$. PME regularly oval, others somewhat irregular in outline. ALE separated by their radius, barely separated from PME, tangent to PLE. PME contiguous for about one-third of their circumference (Fig. 10), separated from PLE by about one-sixth of their diameter. Posterior row wider than anterior row in ratio of 23 : 19. Height of clypeus equal to width of ALE; with six long stiff bristles just beneath ALE.

Chelicerae. Vertical, parallel, somewhat gibbous in front near base; of moderate size; basal segment .333 mm. long; somewhat excavated along obscure fang groove; fang groove apparently smooth with no teeth.

Maxillae. Moderately robust; slightly convergent; bluntly rounded distally and not narrowed at distal end; only slightly notched near middle.

Lip. Wider than long in ratio of about 7 : 5; reaches to about the beginning of last third of the maxillae; membranous.

Sternum. Scutiform; longer than broad in ratio of 11 : 10; quite convex; with definite lobules opposite each coxa separated by broad shallow grooves; widest opposite second coxae but almost as wide between first coxae; sternal suture obscure but apparently procurved; posterior end blunt and not extended between fourth coxae which are separated by about two-thirds of their width; first and second coxae somewhat elongated, third and fourth short, broad, and quadrilateral.

Legs. 4?123. Width of first patella at "knee" .111 mm., tibial index 13.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.644	.333	.533	.466	.289	2.265
2.	.644	.355	.466	.466	.266	2.197
3.	.553	.222	.377	.422	.222	1.796
4.	.710	All other segments lacking				????

Many of the spiniform hairs on legs are scaly or spiny along each shaft. Trichobothria observed on first legs as follows: 1 near distal end and 1 near proximal end of tibia; 1 near distal end of metatarsus; all of these are dorsal in position; all are of the ordinary long slender type with many short lateral branches. In addition to these there are several short erect modified hairs suggesting some sensory function. There are 2 claws set on a strongly and transversely grooved onychium; each claw shows a series of prominent teeth clearly, but probably has a second set of smaller ones; with numerous modified hairs on onychium.

Spines. Apparently, although there are many spiniform hairs on first and second legs, true spines are lacking on these appendages. The third leg bears transparent spines as follows: tibia ventral 0-1p-2 (distal), prolateral 0-0-1-0, retrolateral 0-0-1-0; metatarsus ventral 0-1p-1r, prolateral 0-1-1, retrolateral 0-0-1-0.

Abdomen. Ovoid; 1.40 mm. long; longer than wide in ratio of 63:35; openings to book-lungs and tracheal spiracles very obscure; 2 long black bristles appear to indicate position of reduced colulus between bases of anterior spinnerets; spinnerets in a compact group, much longer than usual in the oonopids from Panama, anterior and posterior pairs equally long, surround and obscure the middle pair. There seems to be a small, mildly developed epigastric scutum covering a small area anterior to epigynal region and extending to the beginning of the pedicel; with a moderate coating of fine light-colored hair.

Epigynum. Simple but more developed than usual in oonopids; somewhat swollen over whole region; a central spermatheca of moderate size lies a considerable distance in front of epigastric furrow; just behind this lies a central chitinized region with anteriorly diverging extensions which seem to form anterior borders for 2 shallow depressions; a weakly chitinized area lies just in front of the procurved posterior border (Fig. 11).

Color in alcohol. Black pigment concentrated in ocular region. Cephalothorax and appendages almost unicolored light yellowish.

Abdomen nearly white. A moderate amount of iridescence appears on all parts of body and legs.

Type locality. Female holotype from C. Z. Biological Area, C. Z., July, 1934. No paratypes.

Genus OONOPOIDES Bryant, 1940

OONOPOIDES BRYANTAE sp. nov.

(Figures 12-13)

Male holotype. Total length 1.199 mm. Carapace .599 mm. long; .447 mm. wide opposite second coxae where it is widest; quite well rounded from opposite palp to posterior border; .244 mm. tall and, therefore, about .54 as tall as wide; evenly arched from PME to beginning of posterior declivity opposite third coxae from which place the descent is moderately steep; steep declivity largely overlapped by anterior end of abdomen; quite convex along central region with lateral sides moderately sloping; with a scanty covering of short dark bristles and 6 longer bristles in a complete row over posterior lateral corners to dorsum; with no definite thoracic groove visible; surface smooth and shining.

Eyes. Six in 2 rows, in a moderately compact group; with AME lacking; posterior row occupies slightly more than nine-elevenths of the width of the carapace at that level; posterior row moderately recurved. Ratio of eyes ALE : PME : PLE = 5 : 6 : 5.5 (ventral borders of ALE and PLE obscure). ALE separated from one another by about four-fifths of their diameter, barely separated from PME and PLE. PME separated from one another by a moderately heavy line, slightly separated from PLE (Fig. 12). Posterior row wider than anterior row in ratio of 9 : 7. Height of clypeus equal to about one-fourth of the diameter of ALE, almost lacking.

Chelicerae. Vertical, essentially parallel; fairly long for so small a spider, slender; .177 mm. long; impossible to examine fang groove without injury to holotype; fang apparently moderately long and evenly curved.

Maxillae. Convergent; long and slender; with distal ends somewhat knobbed and turned outward and ventrally much as described in the genotype of *O. maxillaris* Bryant.

Lip. Deeply grooved at base, somewhat notched distally; only slightly wider than long.

Sternum. Scutiform; longer than wide in ratio of 17 : 16; quite

strongly convex; moderately grooved opposite intercoxal spaces; posterior end bluntly truncated, not extended between fourth coxae which are separated by slightly more than their width; widest between second coxae but nearly as wide between first coxae; sternal suture obscure but apparently very gently procurved; first coxae somewhat elongated, all others quite globose.

Legs. 4123. Width of first patella at "knee" .0555 mm., tibial index 10. Width of fourth patella at "knee" .0555 mm., tibial index 9.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.444	.175	.360	.288	.288	1.555
2.	.399	.177	.289	.266	.266	1.397
3.	.377	.140	.266	.311	.244	1.338
4.	.488	.200	.400	.355	.288	1.731
Palp	.122	.111	.056	...	.177	.466

Length of palpal tarsus is exclusive of the long embolus. Trichobothria observed on fourth leg as follows: tibia, 1 near proximal end and another about one-third from distal end; metatarsus, 1 near distal end; all of these are dorsal. Claws: 2 on an onychium, both apparently with 2 series of teeth.

Spines. Although many spiniform hairs are present, true spines appear to be completely lacking.

Palp. Short; considerably modified; femora considerably deepened dorsoventrally, but not swollen so much laterally; patella swollen, somewhat grooved; tibia very short and globose; tarsus quite inflated, simple, with a very long flagellate embolus (Fig. 13).

Abdomen. Ovoid; .644 mm. long; only anterior one-seventh overlaps carapace; longer than wide in ratio of 29 : 18; widest in middle, bluntly rounded at both ends; without scuta; 6 spinnerets compactly grouped, fairly prominent but not excessively elongated as in genotype, posterior pair somewhat the longest; anal tubercle a short, yellowish-white, flattened cone; openings to book-lungs and tracheal spiracles obscure.

Color in alcohol. Cephalothorax and all appendages a clear yellowish with variations. Abdomen: generally a dark purplish-brown; cardiac region clear and transparent; dorsum and lateral sides subdivided into quadrilateral areas by indefinite transverse bars and longitudinal stripes; each area in turn reticulated by small irregular dark spots on a yellowish white ground; venter nearly white with small brownish spots along ventrolateral sides.

Type locality. Male holotype from C. Z. Biological Area, C. Z.,

July, 1943–March, 1944. Taken in a Berlese funnel by Dr. James Zetek. No paratypes.

Note: It seems quite possible that *O. bryantae* sp. nov. is the male of *Oonops reticulatus* Petrunkevitch from Panama City.

Genus OONOPS Templeton, 1834

OONOPS DONALDI sp. nov.

(Figures 14–16)

Male holotype. Total length 1.60 mm. Carapace .733 mm. long; .599 mm. wide opposite interval between second and third coxae where it is widest; well rounded along ventral margin from just behind posterior row of eyes to posterior border. Rises dorsally behind PME considerably to nearly opposite third coxae from which posterior declivity descends abruptly and with moderate concavity; markedly convex with lateral sides sloping outward; with a considerable space between ventral margin and base of coxae; .333 mm. tall and, therefore, about .56 as tall as wide. No definite median longitudinal thoracic groove visible.

Eyes. Six eyes in 2 rows; all oval: AME lacking; in a moderately compact group; all nocturnal; posterior row moderately recurved; posterior row wider than anterior row in ratio of 4 : 3. Ratio of eyes ALE : PME : PLE = 4.5 : 5 : 4. ALE separated from one another by two-thirds of their long axis, only slightly separated from PLE and PME. PME contiguous, slightly separated from PLE. Width of clypeus equal to five-ninths of the long axis of ALE. Numerous long slender bristles in region of eyes; all eyes surrounded by black pigment (Fig. 14).

Chelicerae. Vertical, parallel, basal segment .244 mm. long; without basal boss; fang slender, evenly curved; fang groove indistinct and without teeth, but with a scanty scopula along promargin.

Maxillae. Convergent; with a chitinous retrolateral ridge; grooved distally; with a chitinous distal hook.

Lip. About as long as wide; reaches to middle of maxillae. Sternal suture obscure, possibly lacking.

Sternum. Convex; cordiform; as wide as long; widest between second coxae, but nearly as wide between first coxae; with a scanty coating of slender bristles; posterior end a blunt point not extended between fourth coxae which are separated by seven-sixths of their width.

Legs. 4213. Width of first patella at "knee" .0777 mm., tibial index 11. Width of fourth patella at "knee" .0666 mm., tibial index 8.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	<i>(All measurements in millimeters)</i>					
1.	.533	.222	.511	.444	.200	1.910
2.	.622	.266	.599	.533	.198	2.218
3.	.533	.200	.333	.466	.200	1.732
4.	.777	.245	.555	.666	.222	2.465
Palp	.178	.089	.154	...	.222	.643

Two claws, simple, curved, similar, each with 3 or 4 teeth; on a long onychium. Trichobothria observed as follows on fourth leg: patella, 1 about one-third from base; tibia, 3 in basal two-thirds; metatarsus 2, 1 near proximal end and 1 near distal end; all dorsal or nearly so; tarsus with a single dorsal spiniform erect bristle near middle. All trichobothria appear to be scaled or finely serrated throughout their length.

Spines. Many hairs are spiniform. First leg: femur dorsal 0-1-0, prolateral 0-0-1-1-0, retrolateral 0, ventral 0-0-1r-1r-0 (prolateral and ventral might be considered together as 2 pairs by some); patella 0; tibia only ventral 2-2-2-2-2 bristles; metatarsus 2-2-2-2 (last pair hardly more than bristles). Second leg: essentially as in first. Third leg: femur only dorsal 0-1-1-1-0; patella apparently only prolateral 0-1 (slender)-0; tibia dorsal 0-1-0, prolateral 0-1-0, retrolateral 0-1-1-0, ventral 0-0-2 (retromarginal, hardly more than a bristle); metatarsus dorsal 0-0-1-1-1 (all staggered), prolateral 1-1-1, retrolateral 0-0-1, ventral 0-0-2. Fourth leg apparently as in third. Some spines are probably removed in handling and scars are difficult to see.

Palp. With bulb only moderately dilated; with 2 terminal spines, the conductor is slender, pointed, and transparent; the embolus is long, twisted, geniculate near tip and black for most of its length (Figs. 15-16).

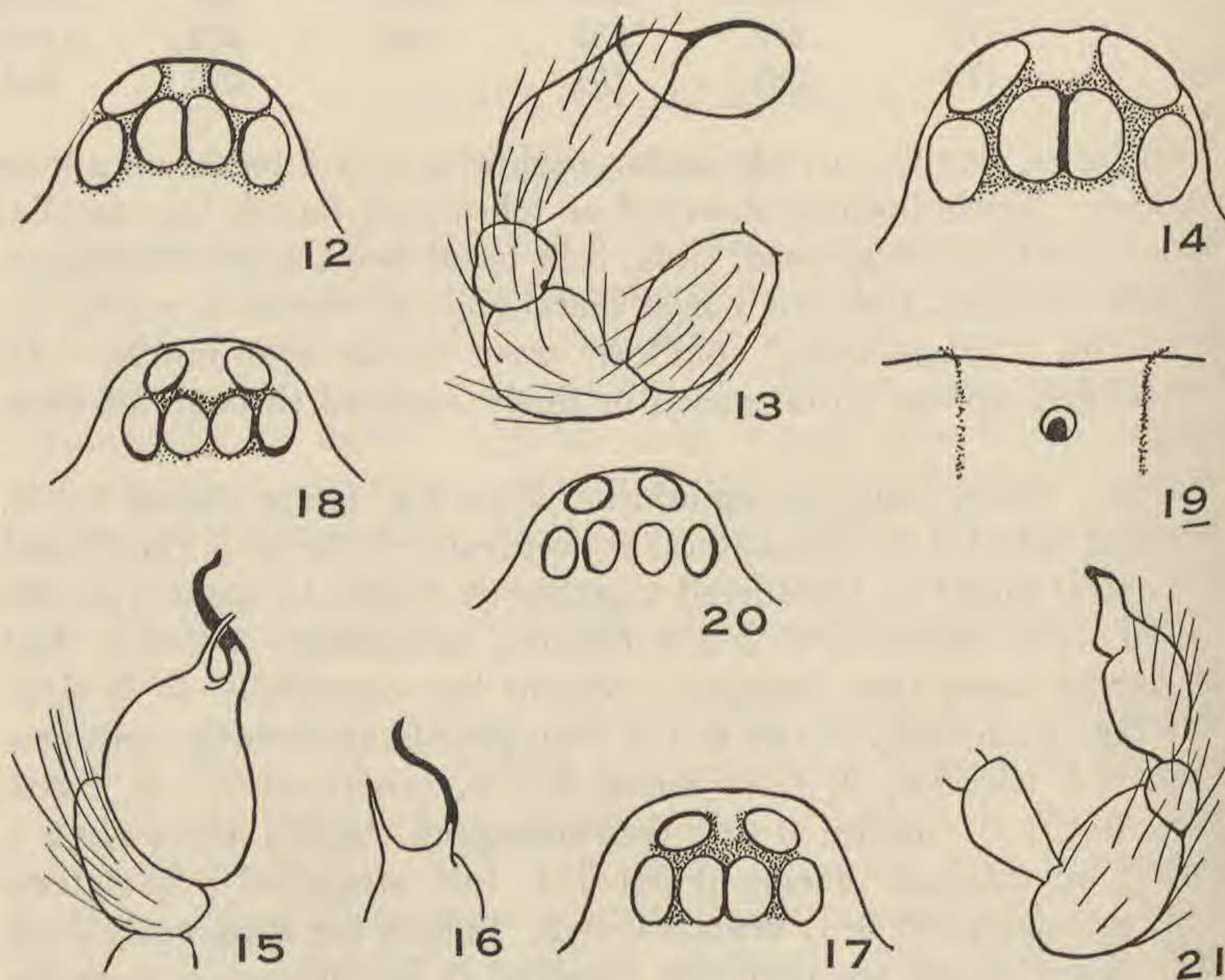
Abdomen. With no scuta; without special sclerites around spinnerets or pedicel. Simple, ovoid. Lung openings and spiracles obscure. Spinnerets 6, slender; anterior pair approximated at bases, diverging distally; middle pair slenderest; all of moderate length. No colulus observed.

Color in alcohol. Abdomen almost white; elsewhere yellowish-white with carapace somewhat the darkest; black pigment restricted to ocular area.

Type locality. Male holotype from Ft. Davis, C. Z., August, 1936. One male paratype from El Valle, R. P., July, 1936.

OONOPS RETICULATUS Petrunkevitch, 1925

Dr. Petrunkevitch had a single female from Panama City, R. P. This type is now sectioned for the study of internal anatomy and is, therefore, unavailable for taxonomic purposes. Unless *Oonopoides bryantae* sp. nov. should prove to be the same, the species has not yet appeared in my collection.



External Anatomy of Oonopid Spiders

Figures 12-21

- Figs. 12-13. *Oonopoides bryantae* sp. nov.; eyes, from above and male palp, respectively.
 Figs. 14-16. *Oonops donaldi* sp. nov.; eyes, from above and male palp (two views), respectively.
 Fig. 17. *O. zeteki* sp. nov.; eyes, from above.
 Figs. 18-19. *Opopaea recondita* sp. nov.; eyes, from above and epigynum, respectively.
 Figs. 20-21. *O. timida* sp. nov.; eyes, from above and male palp, respectively.

OONOPS ZETEKI sp. nov.

(Figure 17)

Female holotype. Total length 1.865 mm. Carapace .777 mm. long; .688 mm. wide opposite second coxae where it is widest; well rounded from opposite palps to posterior border; .311 mm. tall and, therefore, about .45 as tall as wide; rises gently behind PME to posterior declivity which begins opposite third coxae and continues fairly steeply to posterior border; barely separated from abdomen; surface finely and irregularly wrinkled in a longitudinal direction.

Eyes. Six in 2 rows; in a moderately compact group; AME presumably lacking; posterior row occupies five-eighths of width of carapace at level of posterior borders; posterior row either straight or slightly recurved (by posterior borders). Ratio of eyes ALE : PME : PLE = 3.5 : 3.6 : 3.75 (by long axes); exactitude is difficult because of irregularities in margins. ALE separated from one another by one-third of their long diameter; from PME by an equal distance; barely separated from PLE. PME contiguous for nearly one-third of their circumference; tangent to PLE. Posterior row wider than anterior row in ratio of about 5 : 4. Height of clypeus equal to about one-half the long diameter of ALE. Clypeus somewhat inclined forward.

Chelicerae. Vertical, slightly convergent; moderately robust; basal segment .222 mm. long; strongly excavated medially in basal three-fifths so that a somewhat oval opening is formed between them; fang groove obscure, with a single small tooth near inner or medial end which I consider retromarginal; fang slender, evenly curved; a moderately well-developed scopula along obscure promargin of fang groove.

Maxillae. Moderately convergent; lightly chitinized; somewhat tapering distally; with a moderately well-developed scopula; slightly more than twice as long as wide in middle. Some details of fang groove, maxillae and lip taken from dissected paratype to avoid injury to holotype.

Lip. Wider than long in ratio of 5 : 4; anterior border rounded; reaches to about the end of the middle third of length of maxillae; with a procurved sternal suture.

Sternum. Scutiform; quite convex; about as wide as long; widest between second coxae but nearly as wide between first coxae; without transverse grooves and with scarcely discernible lobules opposite coxae; posterior end squarely truncated and not extended between fourth coxae which are separated by seven-sixths of their width; first and second coxae considerably elongated, third and fourth shorter but none globose or even subglobose.

Legs. 4123. Width of first patella at "knee" .0999 mm., tibial index 12. Width of fourth patella at "knee" .0888 mm., tibial index 11.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.577	.266	.555	.444	.266	2.108
2.	.577	.244	.533	.444	.266	2.064
3.	.555	.244	.355	.444	.289	1.887
4.	.688	.289	.511	.599	.333	2.420

Trichobothria observed on first leg of paratype as follows: tibia with 1 about one-third from base, another about one-third from distal end; both dorsal. Palpal tibia also with 2 trichobothria near middle and essentially dorsal in position. Palp without a claw. Two claws, both apparently similar and each with 2 sets of teeth essentially as recorded for other members of the family.

Spines. First leg: femur prolateral 0-0-1-1-0, ventral 0-1r-1r-0, elsewhere 0; patella 0; tibia only ventral 2-2-2-2-1p-0; metatarsus only ventral 2-2-1p (somewhat irregular in position). All spines of first leg long, robust, apparently erectile. Second leg: essentially as in first except spines are less robust. True spines appear to be lacking on third and fourth legs.

Abdomen. Ovoid; 1.07 mm. long; longer than wide in ratio of nearly 4 : 3; widest near middle; no signs of dorsal or ventral scutum; spinnerets in a compact group; anterior spinnerets with bases closely approximated and apparently with remains of reduced colulus between their bases indicated by a pair of black bristles; a sparse coating of short dark recurved hairs; openings of book-lungs, tracheal spiracles very obscure.

Epigynum. With no indication of an epigynal plate except a small central whitish swelling.

Color in alcohol. Carapace yellowish, darkened a little toward ventral border, black pigment surrounding all eyes except a ventral arc of PLE. Appendages yellowish-white, somewhat lighter below. Abdomen nearly white.

Type locality. Female holotype and four female paratypes taken in the C. Z. Biological Area, July, 1943-March, 1944 by Dr. James Zetek in a Berlese funnel.

Genus OPOPAEA Simon, 1891

OPOPAEA RECONDITA sp. nov.

(Figures 18-19)

Female holotype. Total length 1.35 mm. Carapace .576 mm. long; .466 mm. wide opposite interval between second and third coxae where it is widest; considerably narrowed opposite palps; rises somewhat behind posterior row of eyes and then continues nearly level almost to opposite posterior coxae where steep posterior declivity begins; posterior declivity somewhat concave; .222 mm. tall and, therefore, about .48 as tall as wide; quite convex; with numerous minute pits, those on lateral sides tending to occur in irregular longitudinal rows; ventral border strongly chitinized but whole carapace is well chitinized; with a row of 6 or 7 short stout bristles arranged transversely just at beginning of posterior declivity; without a median longitudinal thoracic groove.

Eyes. Six in 2 rows; arranged in a compact group; AME lacking. All eyes nocturnal. Posterior row slightly recurved. Ratio of eyes ALE : PME : PLE = 5.5 : 5 : 4. All eyes somewhat oval. ALE separated by about their long radius, barely separated from PLE and PME. PME separated only by a narrow line, from PLE by a broader line; black pigment concentrated around PME (Fig. 18). Clypeus heavily margined; with width equal to about three-fourths of the short diameter of ALE.

Chelicerae. Coniform; nearly vertical but perhaps directed backward slightly; basal segment .18 mm. long; probably without a basal boss; fang slender; fang groove and teeth not observed because of danger of injury to holotype.

Maxillae. Moderately convergent, slender, rather deeply indented just distal to insertion of palp which occurs on middle third; reaches somewhat beyond tip of lip.

Lip. Nearly triangular; slightly wider at base than long; sternal suture obscure but apparently present and nearly straight.

Sternum. Heavily chitinized; moderately lobulated opposite each coxa; longer than wide in ratio of 9 : 7; widest opposite interval between first and second coxae; moderately convex; first coxae wide apart; posterior end a blunt truncation and not extended between fourth coxae which are separated by about six-fifths of their width.

Legs. 4123. Width of first patella at "knee" .0610 mm., tibial index 11. Width of fourth patella at "knee" .0610 mm., tibial index 10.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.311	.195	.199	.188	.120	1.013
2.	.300	.177	.195	.177	.111	.960
3.	.266	.111	.155	.155	.111	.798
4.	.333	.200	.255	.222	.130	1.140

Femora raised and greatly deepened near proximal end, especially so on first and second legs. Claws 2, on a coniform onychium, apparently simple, curved, similar, and with five or six teeth each. Trichobothria definitely observed; posterior leg: tibia with 3, long, slender, nearly dorsal in position, metatarsus with 1 dorsal near distal end of segment, tarsus with a single short stout one. All trichobothria apparently serrated or, perhaps, scaled. Third leg appears to bear trichobothria essentially like the fourth.

Spines. Legs are probably to be considered as spineless. Under high magnification the hairs appear spiniform and many appear to be finely serrated.

Abdomen. With a dorsal scutum covering the entire surface and a somewhat smaller ventral scutum separated at the epigastric furrow into an anterior plate, which extends dorsally for a considerable distance and makes a well defined chitinous ring around the pedicel, and a posterior plate, which covers the venter to the base of the spinnerets and extends dorsally nearly to the dorsal scutum. The 2 scuta are close together anteriorly but separate further posteriorly. Tracheal spiracles are 2 small oval openings a short distance behind the lung slits. I see no chitinous sclerite at base of spinnerets such as that described by Petrunkevitch ('29) in *O. lutzii*. Almost a perfect oval, nearly flat dorsally, longer than wide in ratio of 18 : 13, widest just behind the middle. Scuta shiny and finely pitted; lightly pubescent. Spinnerets small and obscure; anterior pair longest and somewhat separated; others poorly observed because of reluctance to endanger the holotype by more careful examination and the necessary handling. No colulus observed.

Epigynum. Very simple; with no very definite plate but with a small chitinized "button" between tracheal spiracles and 2 widely separated internal tubes. (Fig. 19).

Color in alcohol. All appendages light brown. Carapace, sternum, and abdominal scuta a rich medium brown. Lightly chitinized regions between scuta yellowish-white.

Type locality. Female holotype taken in Berlese funnel by Dr. James Zetek, C. Z. Biological Area, C. Z., July, 1943-Mar., 1944. No paratypes.

OPOPAEA TIMIDA sp. nov.

(Figures 20-21)

The male described here is in the collection of the Museum of Comparative Zoölogy. It is believed to have been taken from a bat, *Dirias albiventer minor*, collected in the Chilibrillo caves of the Panama Canal Zone by Dr. L. H. Dunn. The exact date of its collection is uncertain, but it is thought to have been about 1936. The specimen was at first regarded as the allotype of *O. recondita* sp. nov. but continued study of the two seemed to indicate that they probably do not belong together. Hence this specimen is described as the holotype of a species new to science.

Holotype male. Not in good condition in several respects; the preservation is defective, but such structures as palps are undamaged. Total length about 1.40 mm. Carapace .53 mm. long; .47 mm. wide opposite interval between second and third legs where it is widest; well rounded from opposite posterior row of eyes to posterior border; only moderately narrowed opposite palps; rises only slightly just behind PME, then nearly flat to opposite third coxae where steep posterior declivity begins; declivity steep to posterior border which is strongly chitinized; apparently without a median longitudinal thoracic groove; with small and obscure pits tending to appear in irregular rows along lateral sides; .1998 mm. tall and, therefore, about .43 as tall as wide.

Eyes. Six in a fairly compact group in 2 rows; AME lacking; much more separated than in *O. recondita* sp. nov.; all eyes nocturnal; posterior row slightly recurved; posterior row wider than anterior row in ratio of 8 : 5.5. Ratio of eyes ALE : PME : PLE = 4 : 3.5 : 3. ALE separated by nearly their diameter, from PLE and PME by a little more than their radius; PME separated by their radius, from PLE by their radius. Width of clypeus equal to radius of AME.

Chelicerae. Essentially coniform; nearly vertical; basal segment .167 mm. long, probably without basal boss; fang slender, evenly curved; fang groove obscure, no teeth observed.

Maxillae. Convergent; pointed distally, enlarged at bases; with palp inserted into middle third; reach well beyond tip of lip.

Lip. Nearly triangular; apparently wider at base than long in ratio of nearly 2 : 1 (limitations difficult to see because of poor preservation).

Sternum. Quite convex; moderately lobulated opposite each coxa; heavily chitinized; longer than wide in ratio of 17 : 14; widest opposite interval between second and third coxae, nearly as wide between first coxae; posterior end squarely truncated and not extended between fourth coxae which are separated by seven-fifths of their greatest width.

Legs. 4123. Width of first patella at "knee" .0444 mm., tibial index 12; width of fourth patella at "knee" .0555 mm., tibial index 13.

	<i>Femora</i>	<i>Patella</i>	<i>Tibia</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.333	.156	.200	.200	.145	1.034
2.	.311	.178	.222	.167	.133	1.011
3.	.244	.133	.167	.167	.133	.844
4.	.377	.155	.289	.244	.155	1.220
Palp	.0999	.1776	.0333	...	.1887	.4995

Two claws on a coniform onychium (badly distorted by defective preservation); simple, curved, similar, and with about 5 teeth. Trichobothria definitely present but preservation so defective that they do not show well and, hence, are not recorded.

Spines. Legs without true spines, but hairs, well distributed, appear under high magnification to be spiniform.

Palp. With a short tibia, a much dilated patella, and a simple tarsus (Fig. 21).

Abdomen. With a dorsal scutum covering entire dorsal surface; a somewhat smaller ventral scutum appears to be incompletely separated into two at the epigastric groove; with a distinct chitinous ring around pedicel. A chitinous sclerite at base of spinnerets may be present as in *O. lutzi* Petrunkevitch ('29) but the shrunken condition of holotype obscures a clear view of the region. Almost a perfect oval, viewed from above; nearly flat dorsally; longer than wide in ratio of 13 : 8, widest about two-thirds from base.

Color in alcohol. All appendages light brownish; body generally a clear brownish, somewhat lighter beneath.

Type locality. Male holotype believed to have been taken from a bat as described elsewhere; from the caves at Chilibre, Panama Canal Zone, about 1936. No paratypes.

Genus SCAPHIELLA Simon, 1891

SCAPHIELLA BARROANA Gertsch, 1941

(Figures 22-23)

Dr. Gertsch had both sexes of this species from the C. Z. Biological Area. The following items may be added to those given in the original description: (1) The epigynum is, as usual in the family, very simple, but it is definitely different from corresponding organs in the other 2 species from Panama; the opening in the center is somewhat oval; on

each lateral side of the opening occurs the usual small dark spot characteristic of the genus; above the middle of the central opening there is a small retro-curved crescent shaped mark connected to the anterior rim by a short line (Fig. 22). On the female palp near base of tibia is a pair of trichobothria of the type common in these oonopids. (2) The structures reported as 2 black teeth on margins of fang groove in the female allotype of *S. williamsi* Gertsch ('41) are clearly seen here to be a pair of curiously shaped digitate spines (Fig. 23) so far forward on prolateral surface as to be unrelated probably to the fang groove. (3) The scopula is composed of serrated and branched bristles or hairs. (4) The fang is delicate and curled into more than a semicircle. (5) There may be no tooth on fang groove, but I think there is a single small retromarginal tooth near medial end and not far from special spines. It seems to be visible in the males who also have the modified spines recorded for the females.

Collection records. C. Z. Biological Area, C. Z., Oct.-Dec., 1941; July, 1943-Mar., 1944. All taken with a Berlese funnel by Dr. James Zetek.

SCAPHIELLA GERTSCHI sp. nov.

(Figures 24-27)

Male holotype. Total length 1.554 mm. Carapace .666 mm. long, .511 mm. wide opposite second coxae where it is widest; moderately well rounded along ventral border from opposite palp to posterior border; .266 mm. tall and, therefore, .52 as tall as wide; only very slightly raised behind PME, nearly level to beginning of posterior declivity opposite third coxae; posterior declivity at first quite abrupt, then somewhat concave, later gradually sloping to posterior border; surface generally smooth, border with short, obscure tubercles; without a median thoracic groove of any kind; with a sparse covering of short, mostly recurved bristles; moderately convex along middle longitudinally and with moderately sloping lateral sides.

Eyes. Six in 2 rows, in a compact group; AME lacking; posterior row occupies about three-fourths of width of carapace at level of posterior borders; posterior row gently recurved, measured by posterior borders. Ratio of eyes ALE : PME : PLE = 3.5 : 3 : 3.5. ALE nearly round; others distinctly oval; all regular in outline (long axis used for measurements). ALE barely separated from one another and from PLE, separated from PME by their radius. PME contiguous to one another and to PLE for about one-fourth of their circumference. Posterior row wider than anterior row in ratio of 9 : 7 (Fig. 24). Height of clypeus equal to about the diameter of ALE.

Chelicerae. Vertical, essentially parallel; fairly robust for so small a spider; basal segment .16 mm. long; somewhat excavated near base in front; apparently without a basal boss; with a moderately well developed scopula along promargin of obscure fang groove; certainty is impossible, but it seems probable that there is a retromarginal tooth on fang groove and, perhaps, also a promarginal one. Fang moderately robust for so small a spider and evenly curved.

Maxillae. Of characteristic form; strongly convergent; almost transverse (Fig. 25); of moderate length; concave anteriorly to insertion of palp; apparently with a small attenuated distal end; appear to be 2 small teeth near base of trochanter of palp.

Lip. Moderately well chitinized; about as wide as long; reaches almost to apex of strongly convergent maxillae; apparently with an obscure, gently procurved sternal suture.

Sternum. Somewhat scutiform; longer than wide in ratio of about 19 : 15; widest between second coxae but nearly as wide between first coxae; smooth and shining without grooves and without noticeable lobules; with a sparse covering of moderately long black bristles; posterior end blunt and not extended between fourth coxae which are separated by four-thirds of their width. All coxae quite globose except the first pair.

Legs. 4123. Width of first patella at "knee" .0666 mm., tibial index 12. Width of fourth patella at "knee" .0666 mm., tibial index 10.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.445	.222	.322	.311	.222	1.522
2.	.400	.222	.289	.288	.199	1.398
3.	.355	.178	.244	.266	.199	1.242
4.	.511	.244	.401	.355	.266	1.777
Palp	.222	.133	.111	...	.311	.777

Claws and trichobothria not observed because of danger of damage to holotype by treatment necessary for examination under high magnification.

Spines. True spines appear to be entirely lacking.

Palp. Short, clavate; femur somewhat curved medially; tibia nearly as wide as long, about .84 as long as patella; tarsus strongly inflated, of the same form as in *S. barroana* Gertsch and *S. williamsi* Gertsch, with tubercle and embolus arising more distally than in either of the previously known species from Panama (Fig. 26); embolus somewhat shorter than in *S. barroana*, without a lateral tuft of modified hairs such as occurs in *S. barroana* Gertsch.

Abdomen. Cephalothorax and abdomen only slightly separated so that species would not, probably, be considered pedunculate; .96 mm. long exclusive of the pedicel; longer than wide in ratio of a little more than 2 : 1; dorsal scutum covers all but a small area dorsal and dorso-lateral to anal tubercle; ventral scutum entire, includes pedicel and base of abdomen and extends posteriorly close to base of spinnerets where a moderately well developed chitinous band surrounds spinnerets on ventral half; 2 black bristles appear to indicate position of reduced colulus; with a small central genital pore but with openings to book-lungs and tracheal spiracles very obscure.

Color in alcohol. Color as described by Gertsch ('41) in *S. barroana* and *S. williamsi*.

Female allotype. Total length 1.687 mm. Carapace .721 mm. long; .555 mm. wide; .244 mm. tall and, therefore, about .44 as tall as wide; just at beginning of steep posterior declivity there appears a pair of long erect bristles (perhaps broken off in male). Otherwise essentially as in male.

Eyes. Posterior row occupies about nine-fourteenths of width of carapace at level of posterior borders; posterior row straight or slightly procurved. Ratio of eyes ALE : PME : PLE = 7.5 : 6 : 7. These ratios are taken from long axes. ALE appear to be considerably larger because they are nearly circular. Height of clypeus equal to about six-sevenths of the diameter of ALE. Otherwise essentially as in male.

Chelicerae. A single, moderately robust, retromarginal (?) tooth on the fang groove shows clearly. Otherwise essentially as in male.

Maxillae. Much less modified than in male, but without significant differences.

Lip and Sternum. Essentially as in male.

Legs. 4123. Width of first patella at "knee" .0555 mm., tibial index 10. Width of fourth patella at "knee" .0666 mm., tibial index 9.

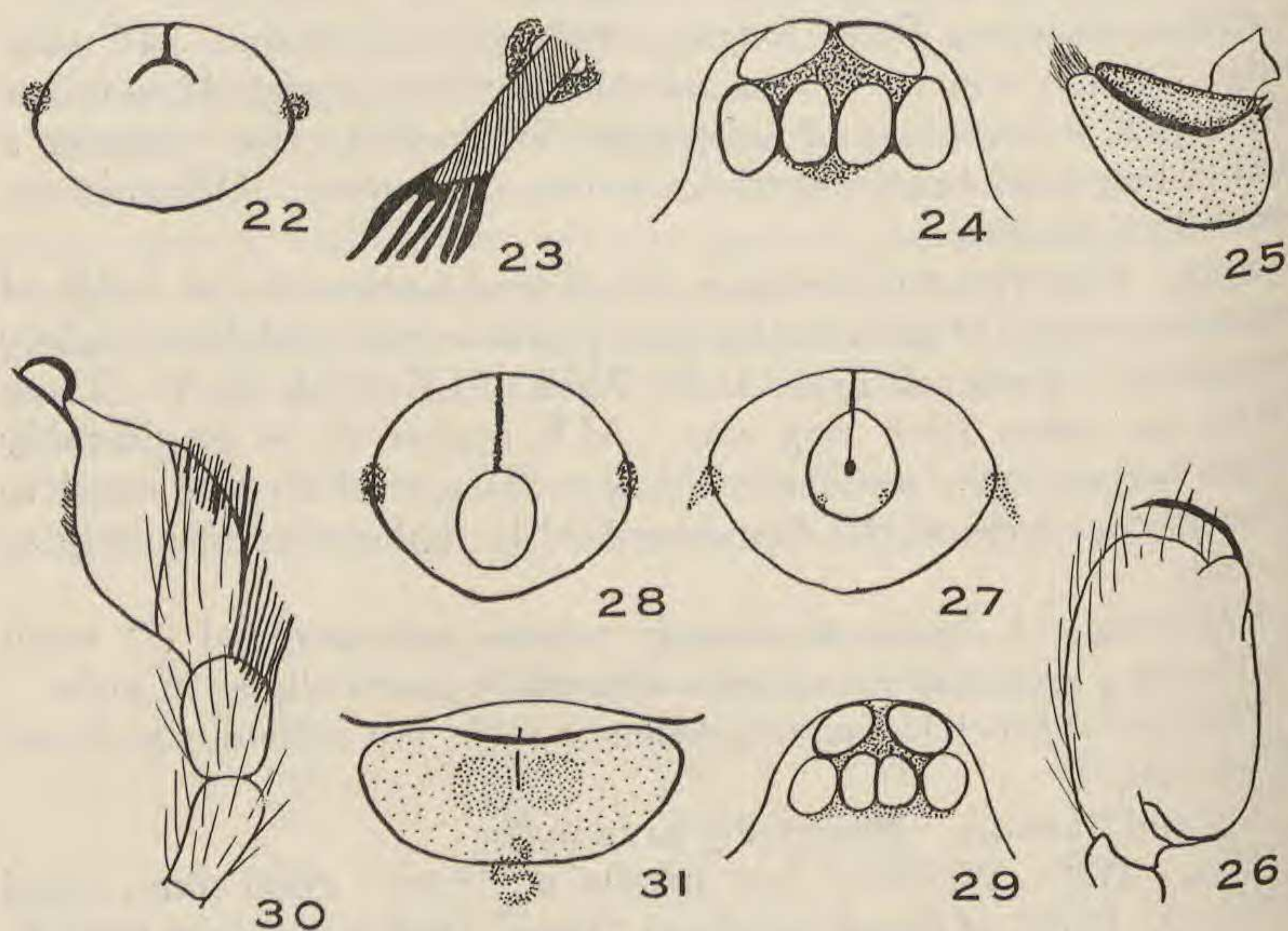
	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.444	.198	.333	.311	.244	1.530
2.	.420	.222	.288	.288	.222	1.445
3.	.395	.195	.266	.277	.222	1.355
4.	.555	.266	.444	.400	.288	1.953

Palpal tibia with a pair of trichobothria, 1 near distal end and 1 near proximal end. First leg observed with trichobothria as follows: none on metatarsus; 2 on dorsal surface of tibia, 1 near each end. Claws 2, with much the same arrangement of teeth as in *Dysderina*.

Spines. The dorsal and ventral spiniform hairs on first and second femora are close to spines but are here considered hairs. Otherwise as in male.

Abdomen. .955 mm. long; longer than wide in ratio of 43 : 20; much compressed laterally, deeper than wide in ratio of 13 : 10; with no dorsal scutum; ventral scutum extending so far dorsally that the 2 sides meet on the dorsum anteriorly and diverge posteriorly; scutum and membranous regions fairly well covered by a scanty growth of short dark hair or bristles.

Epigynum. The shallow opening is slightly angular but in general is a broad oval; 2 chitinous lateral spots quite conspicuous; with a



External Anatomy of Oonopid Spiders

Figures 22-31

Figs. 22-23. *Scaphiella barroana* Gertsch; epigynum and cheliceral spine, respectively.

Figs. 24-25. *S. gertschi* sp. nov.; eyes, from above and right maxilla, respectively.

Figs. 26-27. *S. gertschi*; male palpal tarsus and epigynum, respectively.

Fig. 28. *S. williamsi* Gertsch; epigynum.

Figs. 29-30. *Stenoonops petrunkewitchi* sp. nov.; eyes, from above and male palp, respectively.

Fig. 31. *Triaeris patellaris* Bryant; epigynum.

central pyriform spot attached anteriorly and with a very small dark center (Fig. 27).

Color in alcohol. Almost identical with that of male except for the differences caused by absence of dorsal scutum.

Type locality. Male holotype from C. Z. Biological Area, C. Z., July, 1939. No male paratypes. Female allotype from C. Z. Forest Reserve, C. Z., August, 1936. Four female paratypes from the following localities: C. Z. Biological Area, June-July, 1934; July, 1943-Mar., 1944, Berlese funnel (Zetek); C. Z. Forest Reserve, C. Z., August, 1936.

SCAPHIELLA WILLIAMSI Gertsch, 1941

(Figure 28)

Female allotype. Total length 1.665 mm. Carapace .633 mm. long; .466 mm. wide opposite second coxae where it is widest; regularly rounded from opposite palps to short posterior border; .240 mm. tall and, therefore, about .52 as tall as wide; only slightly raised from PME to beginning of steep posterior declivity opposite interval between second and third coxae from which the descent is steep to posterior border; surface finely granulated along ventral border, in a moderately broad sub-marginal band and in a more conspicuous stripe up each posterolateral corner; with a sparse covering of short dark bristles.

Eyes. Six in 2 rows; in a compact group; AME lacking; posterior row occupies seven-tenths of width of carapace at posterior borders; posterior row gently procurved. Ratio of eyes ALE : PME : PLE = 3 : 2.3 : 2. All eyes nearly round. ALE separated by about one-half their radius, barely separated from PLE and from PME by about one-third of the diameter of the latter. AME contiguous to one another and to PLE. Posterior row wider than anterior row in ratio of 13 : 10. Height of clypeus equal to four-thirds of the diameter of ALE.

Chelicerae. Parallel, vertical, quite prominent near base in front; basal segment .24 mm. long; apparently with a fairly prominent black tooth on each margin of obscure fang groove near medial end; fang slender and evenly curved.

Maxillae. Moderately long and slender; quite convergent with anterior ends pointed and provided with a small scopula.

Lip. Moderately well chitinized; somewhat wider than long; reaches about two-thirds the length of the maxillae.

Sternum. Scutiform; quite convex; quite strongly grooved opposite intercoxal spaces but grooves are short and each reaches only about one-fifth of width of sternum; longer than wide in ratio of

19 : 16; sternal suture moderately procurved; posterior end truncated and not extended between fourth coxae which are well separated. First coxae somewhat elongated; all others nearly globose.

Legs. 4?132. Width of first patella at "knee" .0666 mm., tibial index 14. Fourth leg missing.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.377	.189	.278	.244	.230	1.318
2.	.266	.198	.266	.244	.200	1.174
3.	.333	.177	.245	.244	.200	1.199

Palpal tarsus with a small tuft of modified hairs near base on pro-lateral side. Trichobothria of the long slender type with short lateral branches were observed as follows: 1 dorsal near base of tibia and 2 dorsal just beyond middle of same segment; 1 dorsal near distal end of metatarsus; all legs appear to be the same in this respect. Claws: 2 set on a moderately long, transversely-grooved onychium; each appears to have 2 sets of short teeth, 1 of these is a long series while the other is short.

Spines. Apparently legs are completely devoid of true spines.

Abdomen. Considerably compressed laterally; with nearly parallel lateral sides; pedicel hardly showing from dorsal side; longer than wide in ratio of 23 : 11; 1.02 mm. long; with no dorsal scutum; ventral scutum extends far up lateral sides to dorsum; ventral scutum entire, extended to include pedicel and base of abdomen dorsal to the latter and posteriorly near to spinnerets; with a moderately broad sclerite extending as a band around base of spinnerets except the dorsal fourth of the circumference; apparently 6 spinnerets close together with anterior pair the most robust and longest; a pair of long black bristles appear to indicate the position of the reduced colulus; openings of book-lungs and tracheal spiracles moderately distinct.

Epigynum. Very simple; only a nearly circular opening with thickened chitinous spot on each lateral side and a nearly central circular spot connected to anterior border by a thin line (Fig. 28).

Color in alcohol. Essentially as described for the male by Dr. Gertsch and in both sexes in *S. barroana* (except for the absence of the dorsal scutum).

Type locality. Female allotype from the C. Z. Biological Area, C. Z., sometime between July, 1943 and March, 1944; taken in a Berlese funnel by Dr. Zetek.

Genus STENOONOPS Simon, 1891

STENOONOPS PETRUNKEVITCHI sp. nov.

(Figures 29-30)

I consider this species congeneric with and closely related to *S. nitens* Bryant from St. Croix, Virgin Islands.

Male holotype. Total length 1.34 mm. (cephalothorax and abdomen detached but otherwise in good condition). Carapace .60 mm. long; .422 mm. wide opposite second coxae where it is widest; considerably narrowed opposite palps and at posterior border; .20 mm. tall and, therefore, nearly half as tall as wide; rises slightly just behind PME and then remains nearly level to opposite third coxae from which place the steep posterior declivity descends to posterior border; surface well covered by numerous minute pits or tubercles but less conspicuously so than in *S. nitens* Bryant; without a median thoracic groove; quite strongly convex through central region with lateral sides steeply sloping.

Eyes. Six in 2 rows; arranged in a compact group; AME lacking; eye group occupies about seven-tenths of the width of carapace at level of posterior row; posterior row gently recurved, measured by posterior borders. Ratio of eyes $ALE : PME : PLE = 6 : 5 : 4.4$. All eyes somewhat oval; long axes used to determine ratios. ALE separated from one another by about one-sixth of their length, contiguous to PLE and barely separated from PME. PME contiguous throughout median borders, tangent to PLE. Posterior row wider than anterior row in ratio of 13 : 11. Black pigment concentrated in ocular area. Height of clypeus equal to about one-half of width of ALE; clypeus somewhat convex and with a transverse row of 4 long stiff bristles (Fig. 29).

Chelicerae. Vertical, somewhat divergent, outer margins essentially parallel. Basal segment .18 mm. long, pointed distally, with a well developed scopula of stiff bristles along obscure fang groove which is unarmed. Fang slender and evenly curved. Without basal boss.

Maxillae. Long, slender, extending almost to tip of chelicerae, somewhat divergent; strongly ridged along outer border; with palps inserted into basal third.

Lip. Much broader at base than at distal border; wider at base than long in ratio of about 4 : 3; extends to about the beginning of last third of length of maxillae. Sternal suture either very obscure or lacking altogether.

Sternum. Longer than wide in ratio of about 4 : 3; moderately convex; strongly lobed opposite coxae, with well defined grooves

opposite intercoxal intervals; widest between second coxae but nearly as wide between first coxae; strongly chitinized area extends between coxae in well defined bridges; posterior end a blunt point between fourth coxae which are separated by nearly three-halves of their width. All coxae subglobose.

Legs. 4123. Width of first patella at "knee" .0444 mm., tibial index 10. Width of fourth patella at "knee" .0666 mm., tibial index 12.

	<i>Femora</i>	<i>Patellae</i>	<i>Tibiae</i>	<i>Metatarsi</i>	<i>Tarsi</i>	<i>Totals</i>
	(All measurements in millimeters)					
1.	.377	.200	.260	.210	.170	1.217
2.	.333	.190	.244	.200	.150	1.117
3.	.288	.130	.200	.180	.140	.938
4.	.311	.200	.320	.240	.200	1.271
Palp	.111	.088	.085	...	.144	.428

Femora raised dorsally and somewhat deepened near proximal end. Apparently a single long "feathery" dorsal trichobothrium on palpal tibia; also on first leg there is a pair of the long "feathery" dorsal trichobothria at beginning of last third and a single dorsal one near proximal end; also a single dorsal distal one on metatarsus. Also on first leg a curious type of "hair" grouped near distal end of tarsus but also very similar if not identical "hairs" occur on other segments among numerous spiniform bristles. The special kinds of "hairs" are short, broad and appear to have a close spiral ridge or corrugation extending from near base to tip (viewed from certain angles); when viewed from other angles the "hairs" seem to have a series of short oblique ridges on one side only and to be smooth on the other side. These "hairs" should be carefully studied to reveal their structure and significance more clearly. The claws are 2 and each seems to be simple with a heavy terminal tooth together with a single series of about 4 or 5 smaller teeth more proximal in position.

Spines. Probably to be considered devoid of true spines, although many of the hairs are spiniform.

Palp. Short, simple; with a series of curiously modified hairs chiefly on dorsal surface at distal end of tibia and extending along dorsal surface of tarsus as a distinct pad. Each hair is generally clavate in form and somewhat "feathery" in general appearance as revealed under high magnification; these hairs are somewhat similar to the special "hairs" already noted on pedal tarsi and elsewhere. Tarsus with a moderately inflated, ovoid bulb terminating in an extension which appears to be divided distally into a sinuous hook and a nearly straight spine, but finer details are difficult to determine (Fig. 30).

Abdomen. Ovoid, widest in middle. Soft and completely devoid of scuta or specially chitinized regions; surface smooth and shining, with a slight iridescence; with a sparse covering of short, dark, mostly recurved hairs; openings of spiracles and book-lungs very obscure. Spinnerets presumably 6, closely grouped so that middle ones are hidden in holotype; posterior spinnerets longest but all are of moderate length. No colulus observed.

Color in alcohol. Carapace a clear brownish-yellow. Appendages and sternum somewhat lighter. Abdomen a yellowish-white with slight iridescence. Just in front of base of spinnerets there is a pair of dark spots separated by about their diameter; each spot is composed of 3 smaller spots. Miss Bryant noted similar spots ('42) in *S. nitens* and thought they were indications of a pair of subhypodermal sacs.

Type locality. Male holotype from C. Z. Biological Area, C. Z., July, 1938; collected by Prof. A. Petrunkevitch and loaned to me for study. One male paratype from the same locality, June–October, 1946. Berlese funnel (Zetek).

Genus *TRIAERIS* Simon, 1891

TRIAERIS PATELLARIS Bryant, 1940

(Figure 31)

Described from Cuba where it was collected by Dr. P. J. Darlington of the staff of the Museum of Comparative Zoölogy. Dr. W. J. Gertsch first identified one of my specimens and I have confirmed this by a comparison with the holotype and paratypes. Only females are known. Epigynum as shown in Figure 31.

Collection records: C. Z. Biological Area, C. Z., summer of 1938 (Petrunkevitch); July, 1943–March, 1944; June–October, 1946; eleven specimens collected 1943–1946 in a Berlese funnel by Dr. James Zetek.

Addendum. The new species recognized in this paper include those named in honor of individuals as follows: *Oonopoides bryantae*, sp. nov. in honor of Miss Elizabeth B. Bryant, devoted student of spiders and curator of the extensive collection of these animals in the Museum of Comparative Zoölogy at Harvard College; *Oonops donaldi* sp. nov. in honor of my son, Dr. Donald H. Chickering, who was my close companion and assistant during two very pleasant summers in Panama; *Oonops zeteki* sp. nov. in honor of Dr. James Zetek, for many years

the devoted caretaker of the C. Z. Biological Area, C. Z. and untiringly coöperative in helping me to plan my several summers' field work in Panama; *Scaphiella gertschi* sp. nov. in honor of Dr. W. J. Gertsch, American Museum of Natural History, New York City, able student of spiders and helpful consultant; *Stenoonops petrunkevitchi* sp. nov. in honor of Professor Emeritus Alexander Petrunkevitch, Yale University, distinguished arachnologist and for nearly forty years a teacher, close friend, and always a stimulating influence.

BIBLIOGRAPHY

BANKS, NATHAN

1929. Spiders from Panama. Bull. Mus. Comp. Zoöl. at Harvard College, **69**:53-96, 4 pls.

BRYANT, ELIZABETH B.

1940. Cuban Spiders in the Museum of Comparative Zoölogy. Bull. Mus. Comp. Zoöl. at Harvard College, **86**:249-532, 22 pls.
1942. Notes on the Spiders of the Virgin Islands. Bull. Mus. Comp. Zoöl. at Harvard College, **89**: 317-363, 3 pls.

CAMBRIDGE, O. P. and CAMBRIDGE, F. P.

- 1889-1905. Arachnida-Araneida. Vols. I-II. In: Biologia Centrali-Americana. Dulau & Co., London.

GERTSCH, W. J.

1941. Report on Some Arachnids from Barro Colorado Island, Canal Zone. American Museum Novitates, No. **1146**. The Amer. Mus. of Nat. Hist., New York City, 1-14, 4 pls.

PETRUNKEVITCH, ALEXANDER

1925. Arachnida from Panama. Trans. Conn. Acad. Arts and Science, **27**:51-248.
1929. The Spiders of Porto Rico. Pt. 1. Trans. Conn. Acad. Arts and Science, **30**:1-158.

WILLIAMS, ELIOT C., JR.

1941. An Ecological Study of the Floor Fauna of the Panama Rain Forest. Bull. Chicago Acad. of Sciences, **6**:63-124.